

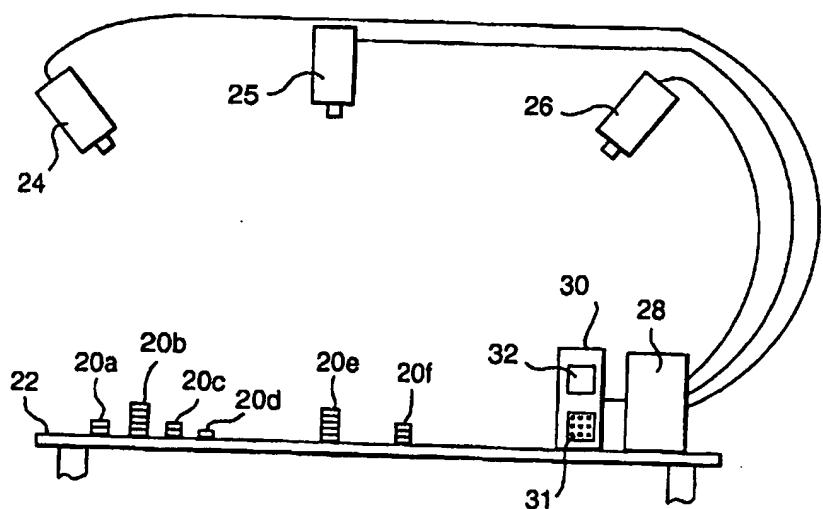
Express Mail No.
EV719384947US

(12) UK Patent Application (19) GB (11) 2 382 034 (13) A

(43) Date of A Publication 21.05.2003

(21) Application No 0126424.1	(51) INT CL ⁷ A63F 5/00, G07F 17/32
(22) Date of Filing 03.11.2001	
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(54) Abstract Title Betting game scoring and monitoring	
(57) Apparatus for a betting game comprises a table 22 having a layout (fig.1) on which a player makes his bet using a stack of betting chips 20a-f, means 24,25,26 for determining the location of each stack on the layout and identifying the bet made by each player and analysis means which respond to input data to determine which players have won and how much those players have won. Preferably the apparatus can indicate the number of chips a winning player should be given and can identify the number of chips in a stack. Optionally the location determining means may comprise at least two image capturing devices or alternatively means for interrogating radio frequency tags which are contained in each betting chip. The winning number can be input by the croupier through a numerical keypad. Preferably, when the game is roulette the roulette wheel can be supplied with a sensor to detect the winning number and supply the data to the analysis means.	

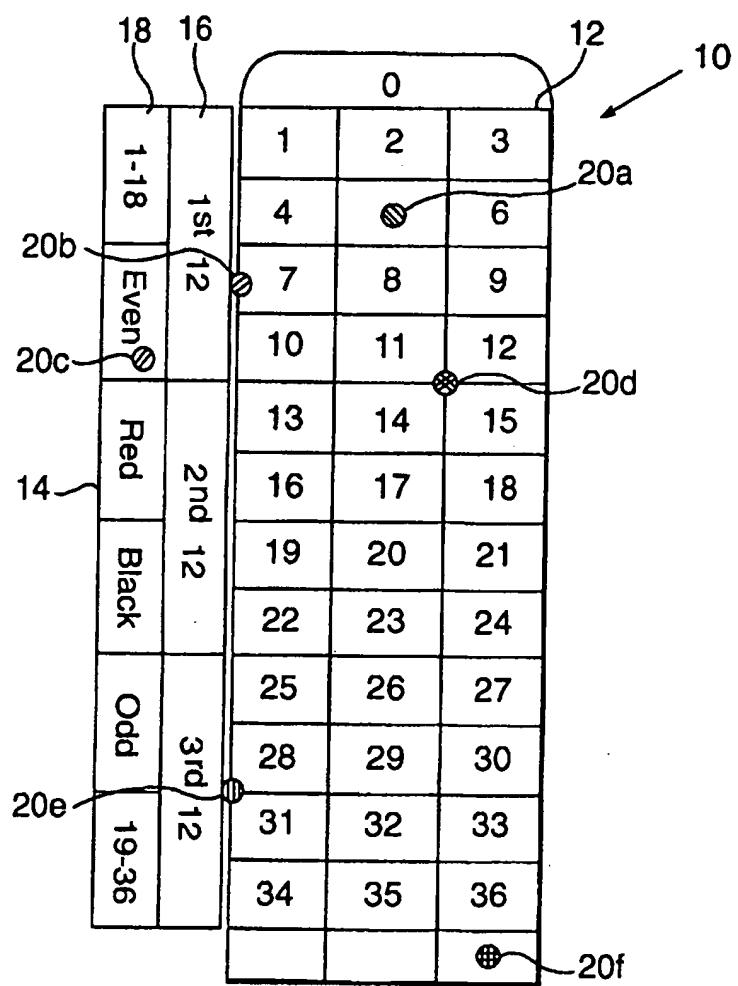
Fig.2.



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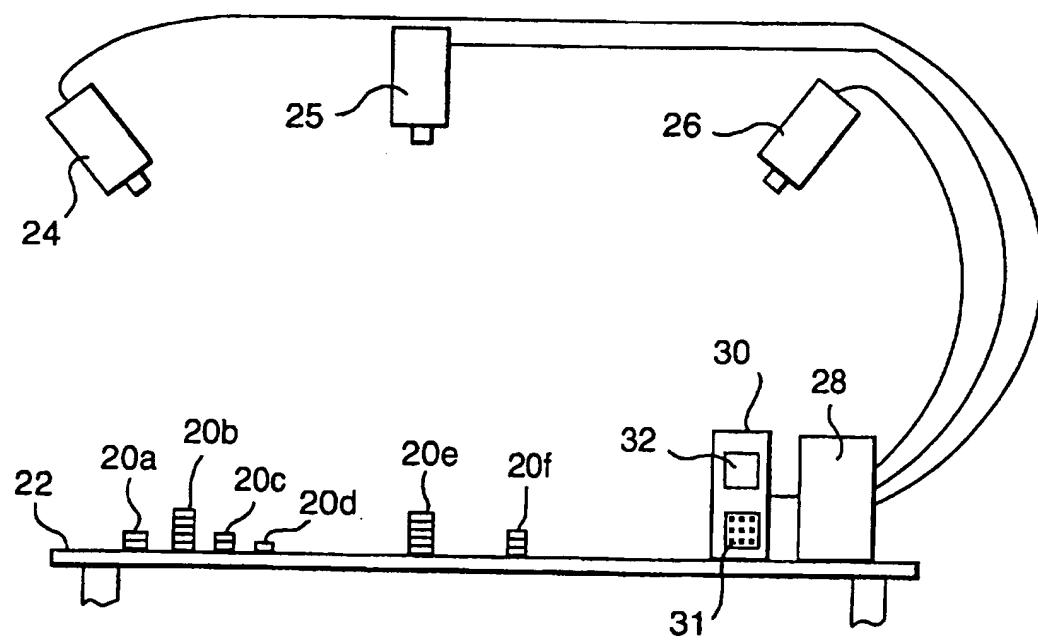
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Fig.1.



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Fig.2.



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Betting Game Scoring

This invention relates to a betting game, such as roulette, in which bets are made by placing chips on a 5 layout, and provides an apparatus and a method of determining the amounts won by the different players.

The game of roulette has been played for some centuries. It requires a roulette wheel, and a roulette 10 table on which the players place their bets. The roulette wheel consists of a convex disk, typically with thirty-seven compartments around its rim that are numbered from 0 to 36, the non-zero numbers being coloured alternately red and black. The wheel can turn 15 freely on a vertical axis. In use, the croupier spins the wheel one way, and projects a small ball onto a concave peripheral zone onto the wheel in the opposite direction; the ball eventually comes to rest in one compartment, and the number of that compartment determines which players 20 win. The roulette table or roulette layout has spaces corresponding to each of the numbers on the wheel, and other spaces corresponding to, for example, any red number, any black number, any even number, any odd number, a number between 1 and 12, etc.. Each player 25 purchases several chips, the colour of the chips identifying the player, and places his bet (before the wheel is spun) by placing one or more of his chips at a space on the layout. If that space corresponds to a winning number or colour when the wheel has been spun, 30 then the croupier returns to that player a multiple of the number of chips that were bet, the multiple depending on the nature of the bet, for example 2x if the colour is correct (so the odds are 1:1), or 36x if the number is correct (so the odds are 35:1). If the space is not a 35 winning number or colour, the chips are removed by the croupier. Even a skilled croupier will take a while to

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work out how much each of the winning players must be paid, and it would be desirable to be able to assist the croupier in this task so that it would take less time, and also to reduce the risk of mistakes.

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According to the present invention there is provided an apparatus for a betting game comprising a table defining a layout on which each player makes his bet by placing a stack of chips on the layout, means for 10 determining the location of each stack on the layout and for identifying the bet made by each player, and, in response to input data corresponding to a winning number, for determining which players have won, and how much each should be paid.

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Preferably the location determination means comprises at least one image capturing device viewing the layout, and analysis means linked to the image capturing device.

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In its simplest form, the apparatus merely indicates that, for example, the player who placed the yellow chips should be given back 2x his stake. More preferably the apparatus incorporates means to determine the number of 25 chips in each stack, so that the apparatus can indicate the actual number of chips to be returned to each winning player. Preferably this is achieved using at least one other image capturing device viewing the layout from a different orientation, and means to determine the height 30 of each stack from analysis of the two images, by photogrammetry. Alternatively each chip may contain a radio frequency tag, so that the number of chips in each stack can be automatically detected; such tags may also be used to locate each chip on the layout.

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The apparatus is suitable, in particular, in the

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game of roulette. The input data indicating the winning number may be supplied manually by the croupier, for example using a numerical keypad. Alternatively an optical or electronic sensor may be provided in the wheel 5 to identify the winning number and to provide that information as input data to the analysis means.

The invention also provides a method of determining which players have won, and how much each should be paid, 10 using such an apparatus.

The invention will now be further and more particularly described, by way of example only, and with reference to the accompanying drawings in which:

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Figure 1 shows a plan view of a roulette layout, on which six stacks of chips are shown; and

Figure 2 shows a side view of a roulette table 20 incorporating the apparatus of the invention.

Referring to figure 1, a roulette layout 10 has a rectangular array 12 made up of three columns of twelve rectangular spaces that are numbered from 1 to 36, with 25 an adjacent rectangular space at one end numbered 0, and three spaces at the other end. The non-zero numbers are coloured two different colours alternately (when considered in numerical sequence), in this example red and black, while the number 0 is a different colour; the 30 different colours of the numbers are not indicated on the figure. The colours of the numbers on the associated roulette wheel (not shown) are the same as the colours of the numbers on the layout 10.

35 Alongside the array 12 is a rectangular array 14 of nine rectangular spaces that represent various

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alternative selections: a column 16 of three spaces and a column 18 of six spaces. The three spaces in the column 16 correspond to selection of numbers in the ranges 1 to 12, 13 to 24, and 25 to 36 respectively. The six spaces 5 in the column 18 correspond to selection of a number in the range 1 to 18, an even number, a red number, a black number, an odd number, and a number in the range 19 to 36, respectively.

10 When a player wishes to place a bet, he places one or more chips in a stack 20 in a place on the layout that corresponds to the outcome he hopes will happen when the wheel is spun. So to bet that the number selected by the wheel is an odd number, the chips would be placed in the 15 space marked "ODD" in column 18, while to bet that the number selected by the wheel is a number between 25 and 36, the chips would be placed in the space marked "3RD 12" in column 16, etc. Other bets are made by placing the chips on the array 12. For example to bet that a 20 specific number is selected, the chips are placed in the correspondingly numbered space; to bet that the number is in one of the three columns, the chips are placed in the blank space at the bottom of that column; to bet that the number is in one of the twelve rows, the chips are placed 25 at the left hand edge of that row. To bet that the number is in one of two adjacent spaces, the chips are placed on the line separating the spaces. In a similar fashion it is possible to bet on adjacent rows, adjacent columns, adjacent dozens, etc.

30 The croupier indicates that the time allowed for placing bets is ending by saying, "No more bets". After the players have placed their bets, the croupier spins the wheel, and launches the ball onto it in the opposite 35 direction, so that it eventually indicates a number (and hence a colour). If a player's bet is successful, the

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croupier returns to him a multiple of the number of chips in his stack, the multiple depending on the nature of the bet.

5 The chips belonging to different players are distinguished by colour. Referring again to figure 1 six different stacks are shown (the different hatching indicating differences in colour). The stack 20a is a bet that the number will be 5 (and the corresponding multiple is 36); the stack 20b is a bet that the number will be 7, 8 or 9 (and the corresponding multiple is 12); the stack 20c is a bet that the number will be even (and the corresponding multiple is 2); the stack 20d is a bet that the number will be 11, 12, 14 or 15 (and the corresponding multiple is 9); the stack 20e is a bet that the number will be in the range 28 to 33 (and the corresponding multiple is 6); and the stack 20f is a bet that the number will be in the right hand column (and the corresponding multiple is 3). It will be appreciated that several players may be winners at once. For example if the number is 12 then the players placing stacks 20c, 20d and 20f are all winners, while if the number is 30 then the players placing stacks 20c, 20e and 20f are all winners.

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Referring now to figure 2, the layout 10 of figure 1 is on a table 22. Three television cameras 24, 25 and 26 are mounted on the ceiling (not shown) and arranged to view the layout 10 from different orientations. The camera 25 views the layout from directly above, while the other cameras 24 and 26 view the layout from opposite directions. The signals from the cameras 24-26 are supplied to an image processing unit 28. The images are processed so as to ascertain the position of each stack 20a-f on the layout, and hence the nature of the corresponding bet. The images are also processed so as

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to ascertain the height of each stack 20a-f, making use of the stereoscopic information from pairs of cameras. The information about the positions and heights of the stacks 20a-f is supplied to a microprocessor and display 5 unit 30.

After the croupier has spun the wheel and hence selected a number, that number is input (using a numerical keypad 31) by the croupier into the 10 microprocessor unit 30, which hence calculates how many chips each player should be given. That information is displayed to the croupier on a screen 32.

It will be appreciated that the invention may be 15 performed in a different way to that described above while remaining within the scope of the invention. The roulette wheel may include a sensor to detect the selected number automatically, such a device being known for example from US 4 735 416, and that information being 20 provided directly to the microprocessor unit 30 so that the keypad 31 would not be required. The camera arrangement may differ from that described above, for example there might be just a single camera, viewing the table obliquely and hence determining the positions and 25 heights of the stacks; but there are preferably at least two such cameras as this makes any potential ambiguities easier to resolve. It will also be appreciated that the apparatus might also include a large display, visible to the players, which might display both the location and 30 height of the stacks, initially, and subsequently the number of chips payable to each player. Furthermore, since the image of the layout is only required when all the bets have been placed, the television cameras might be replaced with digital cameras, arranged to operate 35 when the croupier calls 'No more bets', and to supply digital images to the processing unit 28.

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It will also be appreciated that the payout might not be made by the croupier, but might instead be made by an automated payout machine, supplied by information from 5 the microprocessor 30.

It should also be emphasised that the layout described in figure 1 is given by way of example only, and that other layouts are sometimes used. In particular 10 those spaces represented in columns 16 and 18 of figure 1 may be arranged differently. In some games of roulette there are spaces for both 0 and 00. There may also be spaces for selecting additional options, for example an array of the numbers arranged in the order in which they 15 appear on the roulette wheel, so that a player may select a group of adjacent numbers in that array. There are other variations in the way roulette is played, for example in some cases all players may play with chips of the same colour, and the croupier has to be aware which 20 player has placed which bet. Furthermore it should be emphasised that the invention is applicable to games other than roulette.

Not only does the invention assist the croupier in 25 determining how much the winning players should be paid, but it can also help in preventing fraud.

Claims

1. An apparatus for a betting game comprising a table defining a layout on which each player makes his bet by placing a stack of chips on the layout, means for determining the location of each stack on the layout and for identifying the bet made by each player, and, in response to input data corresponding to a winning number, for determining which players have won, and how much each should be paid.
2. An apparatus as claimed in claim 1 incorporating means to determine the number of chips in each stack.
- 15 3. An apparatus as claimed in claim 2 wherein the analysis means indicates the number of chips that each winning player should be given.
4. An apparatus as claimed in claim 2 or claim 3 20 wherein the means to determine the number of chips in each stack comprises at least two image capturing devices viewing the layout from different orientations, and means to determine the height of each stack from analysis of the two images.
- 25 5. An apparatus as claimed in claim 2 or claim 3 wherein each chip contains a radio frequency tag and the means to determine the number of chips in each stack comprises means to interrogate these tags.
- 30 6. An apparatus as claimed in any one of the preceding claims wherein the location determining means comprises at least one image capturing device viewing the layout, and analysis means linked to the image capturing device.
- 35 7. An apparatus as claimed in any one of the preceding

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claims including a numerical keypad whereby the winning number may be supplied manually by a croupier as input data to the analysis means.

5 8. An apparatus as claimed in any one of claims 1 to 6 wherein the game is roulette and the apparatus also comprises a roulette wheel with a sensor to identify the winning number and to provide that information as input data to the analysis means.

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9. An apparatus substantially as hereinbefore described with reference to, and as shown in, the accompanying drawings.

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Application No: GB 0126424.1
 Claims searched: 1 to 9

Examiner: Andrew Hole
 Date of search: 11 March 2003

Patents Act 1977 : Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X	X: 1-3, 5, 6 & 8	US 5770533 (FRANCHI) - see whole document, note particularly fig.7, col.2 lines 55-67, col.3 lines 9-25, col.11 line 13-col.12 line 7 & col.16 lines 42-45
Y	Y: 7	
X	X: 1-3	US 4531187 (UHLAND) - see whole document, note particularly figs 2 & 3 and col.2 lines 7-60
Y	Y: 1-7	
X, E	1 to 4, 6 to 8.	WO 2001/086604 A2 (ENGELS) - see figures and description of the preferred embodiment.
Y	1, 2 & 4	WO 1997/013227 A1 (DIGITAL BIOMETRICS) - see whole document, note particularly fig.1 & p.4 lines 3-22 and p.7 lines 1-8
Y	1, 2 & 6	US 5919090 (MOTHWURF) - see whole document, note particularly col.1 line 43-co.2 line 9
Y	1, 2 & 5	US 5785321 (VAN PUTTEN ET AL.) - see whole document, note particularly fig.1 & col.1 lines 4-24
Y	7	WO 1997/038766 A1 (VALDEZ) - see p.9, line 17-p.10, line 2
A		WO 2000/015313 A1 (ORDER)

Categories:

X Document indicating lack of novelty or inventive step	A Document indicating technological background and/or state of the art
Y Document indicating lack of inventive step if combined with one or more other documents of same category.	P Document published on or after the declared priority date but before the filing date of this invention.
& Member of the same patent family	E Patent document published on or after, but with priority date earlier than, the filing date of this application.



Application No: GB 0126424.1
Claims searched: 1 to 9

Examiner: Andrew Hole
Date of search: 11 March 2003

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^v:

A6H, G4V

Worldwide search of patent documents classified in the following areas of the IPC⁷:

A63F, G07F

The following online and other databases have been used in the preparation of this search report:

WPI, EPODOC, PAJ